



Marine birds and mammals of the Pacific Subarctic Gyres

A.M. Springer^{a,*}, J.F. Piatt^b, V.P. Shuntov^c, G.B. Van Vliet^d,
V.L. Vladimirov^c, A.E. Kuzin^c, A.S. Perlov^c

^a*Institute of Marine Science, University of Alaska Fairbanks, Fairbanks, AK 99775 USA*

^b*US Geological Survey, Biological Resources Division, 1011 E Tudor Road, Anchorage, AK 99503 USA*

^c*Pacific Research Institute of Fisheries and Oceanography (TINRO), 4 Shevchenko Alley, Vladivostok, 690600 Russia*

^d*PO Box 210442, Auke Bay, AK 99821 USA*

^e*Russian Federal Research Institute of Fisheries and Oceanography, 17 Verkhaya Krasnoselskaya, Moscow, 107140, Russia*

Abstract

The importance of the subarctic gyres of the North Pacific Ocean to marine birds and mammals is poorly known because of a paucity of data spanning appropriate scales of time and space. The little information that is available indicates the western subarctic gyre (WSAG) is more productive than the eastern subarctic gyre (ESAG). In summer the WSAG supports a greater density and higher biomass of seabirds than the ESAG, including at least two species that are more abundant at nesting colonies in the eastern subarctic. Perhaps most revealing of the seabird distributions in this regard is that of southern hemisphere shearwaters (*Puffinus* spp.) that overwinter in the North Pacific. Their biomass is an order of magnitude greater than that of any northern hemisphere species and is three-fold greater in the WSAG than in the ESAG. Several species of cetaceans also appear to be, or to have been prior to commercial depletions, more abundant in the WSA. Among the many prey species consumed by marine birds and mammals, squids and fishes in the family Myctophidae predominate overall. Other forage species, notably euphausiids, Pacific saury (*Cololabis saira*) and Atka mackerel (*Pleurogrammus monopterygius*) are important at times to certain species. The principal exceptions to this generalization are baleen whales and small seabirds that consume zooplankton. Interannual and decadal-scale variability in the physical environment and food web production affect seabirds and marine mammals at sea and at coastal breeding locations around the margins of the gyres. © 1999 Elsevier Science Ltd. All rights reserved.

* Corresponding author. Tel.: + 1 907 474 6213; fax: + 1 907 474 7204; e-mail: ams@ims.uaf.edu